

ABSTRACT

Novel antimicrobial agents that can serve as replacements to conventional pharmaceutical antibiotics are disclosed. The antimicrobial agents comprise conjugatively transmissible plasmids that kill targeted pathogenic bacteria, but are not harmful to donor bacteria. Two types of lethal transmissible plasmids are disclosed. One type kills recipient bacteria by unchecked (“runaway”) replication in the recipient cells and is prevented from occurring in donor cells. Another type kills recipient bacteria by expressing a gene that produces a product detrimental or lethal to recipient bacterial cells, that gene being prevented from expression in donor cells.